"POST-TRAUMATIC STRESS DISORDER (PTSD) AND QUALITY OF LIFE (QOL) OF NATURAL DISASTER VICTIMS OF UTTARAKHAND"

SYNOPSIS SUBMITTED

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Background of the Study

Twenty first century is facing global issues including environmental manipulation, climate change and global warming. Despite the age we are in, the magnitude, intensity and frequency of natural disasters have increased dramatically. Disasters claim thousands of lives, immense loss of man, material and resources throughout the world. Increasing population and subsequent developments in urbanization, use of degraded lands and manipulation within the environment has disturbed the natural process of nature.

Droughts, floods, earthquakes and cyclones devastate the country with grim regularity. They are spiralling out of control, increasing in frequency causing more injury, disability, mental illness, disease and death, adding to the Health and economic burden of an already improvised nation.

Talking about northern region of Uttarakhand, it's covered with mountains, extended in 53,483 square kilometer, composing landmass of 63 percentages of Indian sole.

Uttarakhand is an Indian Himalayan state known for its rich spiritual and religious tourism, ecological richness and diversity and cultural ethos rooted in traditions, but it is also known for growing frequency and intensity of natural disasters, and for its fragility of ecological and geological systems; consisting most of the uplifted sedimentary and metamorphic rocks and tectonically very active, the region is vulnerable to natural disasters; due to its geo-climatic, ecological and socio economic settings, Uttarakhand is one of the most disaster prone state of the country.

A massive landslide (in the north-east region of the Kedar valley) and heavy rainfall (in the north-west of the Kedar valley) occurred at the same time and formed a small lake.

About 14 km pedestrian route between Gaurikund and Kedarnath was completely washed away. Maximum damage occurred in Kedarnath, Guiaya, Lenchuri, Ghindurpani, Rambara, Gaurikund and downstream area up to Rudrapryag; the numerous side effects of the rainfall destroyed the state's economic lifelines over 9000 km of roads and 225 bridges were damaged and 61 hydroelectric power plants 465 km distribution lines and 377 transformers were destroyed.

People died because of rainfall, chilling nights, scarce resources for medical help, food water and shelters. Approximately 4200 villages lost its road connectivity.

In view of the recent catastrophic flash flood in Uttarakhand with unprecedented death & destruction and ample scope for further research into evident adverse outcomes from such calamities in disaster prone and vulnerable areas, the present study has been designed to measure the occurrence PTSD & H-QOL among the flash flood victims; also, evaluate the ongoing disaster preparedness and mitigation measures in the area of coverage. The current reviewing of literature, the knowledge of methodology and applications of comprehensive well researched indicators will help to address the recent issues.

Objectives

1. To ascertain the magnitude/prevalence of PTSD among the Disaster victims of the Uttrakahand.
2. To estimate the H-QOL of the Disaster victims.
3. To study association, if any, between variables of PTSD and H-QOL of the victims on follow-up".

4. To undertake a SWOT analysis of the ongoing Disaster preparedness and mitigation measures in the area of coverage.

Hypothesis

H1- Post- Traumatic Stress Disorder (PTSD) is significantly associated with the Health related Quality of Life of Post Disaster victims at the level of significance $p \leq 0.05$.

Material and Methods

Universe of study: Uttarakhand

As a region of mountains, this state has major threat from natural calamities. The recent tragedy, which the state witnessed, was Kedarnath flood in the year 2013. It washed away the largest number of inhabitants and visitors. Approximately One lac ten thousand families was evacuated from the disaster afflicted region. Total fatalities was close to 5000; with missing estimated number of 4,700.The actual toll was expected to be much higher than the observed numerical.

Study Population: Disaster victims of June, 2013 from the Rudraprayag District.

Study Design

The study design adopted had both Quantitative and Qualitative research as it was most appropriate to attain the data from the Disaster victims. Quantitative component of the study design was used to assess Prevalence of PTSD and post Disaster "H-QOL" among the afflicted. The Qualitative component study design was used to do SWOT

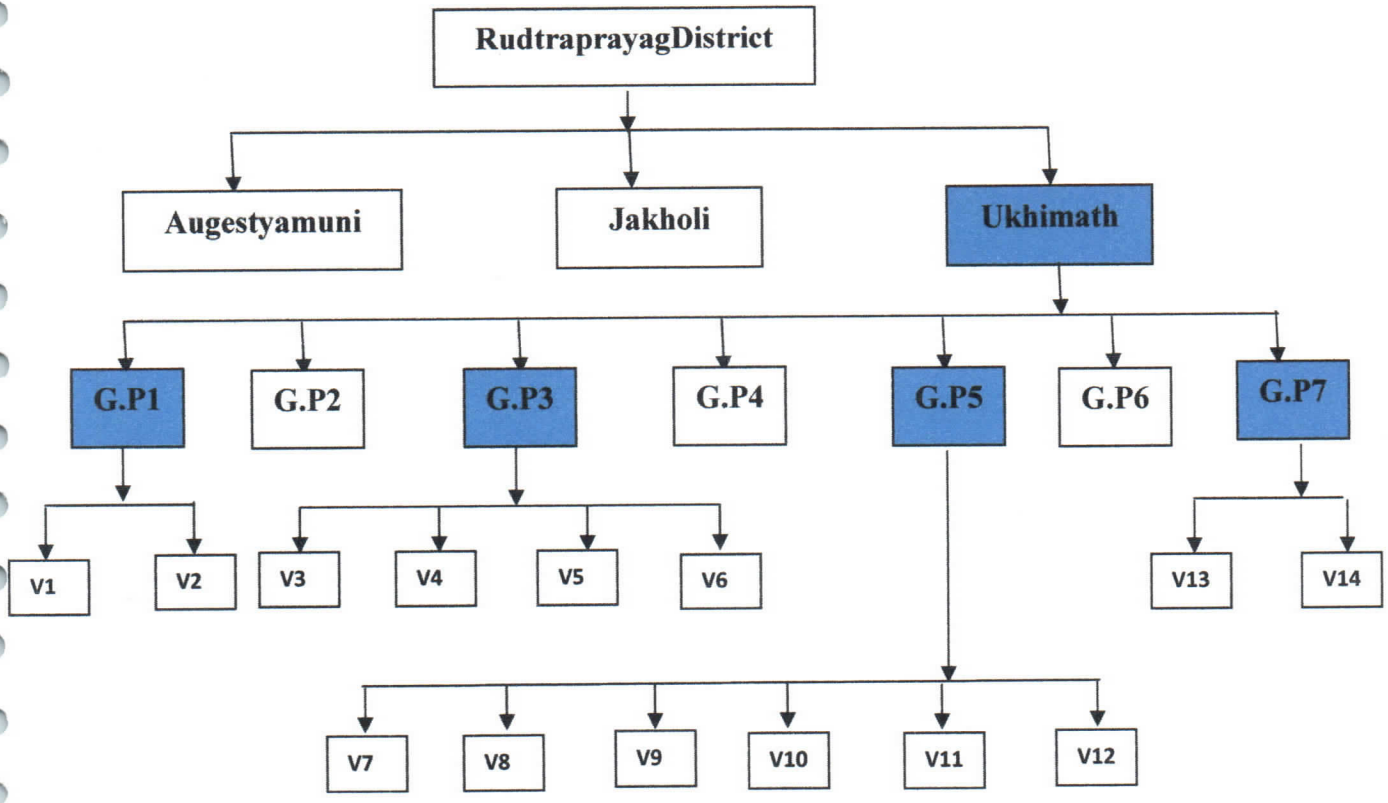
analysis on ongoing disaster preparedness and mitigation process. The study was designed keeping in view the objective and expected outcome of the study.

Type of the study

A cross-sectional design with prospective follow-up was adopted so the post-traumatic stress symptoms could be measured among Disaster victims. The post-traumatic stress was considered after six months from the event exposure, besides allowing for comparison with the baseline findings.

Sampling Technique

A multi-stage probability sampling technique was used to choose the geographical area of coverage". "Systematic random sampling with appropriate sampling interval was employed to sample study blocks & villages and calculate study subjects.



The multistage systemic sampling was used to select the area; the process is depicted as follows;

At stage I: 01 Block (Ukhimath) was sampled from 03 blocks

At stage II: 04 Grampanchayats were sampled from a total of 07 Grampanchyats of the selected Block with a SI of 2 (30%)

At stage III: All the 14 Villages were selected from Sampled 04 Grampanchyats.

Inclusive Criteria

Disaster affected victims who were

1. "Head of the Family".
2. "Next to head in the family".
3. "Any individual directly injured in the disaster or in the family".
4. "Non Alcoholic individuals".
5. "Age > 14 years". (Mahalingam V & Roy D, 2017)

Sample

The samples were the "Head and Next to Head" members "of all the households". The total calculated houses were 1129 and considering 02 per family, the sample size calculated was "2258 i.e. 02×1129". Assuming "50% of the selected household's i.e. 564 households" had "at least" one injured person; total sample was calculated to be 2822. (Mahalingam V & Roy D, 2017)

Base Line

The baseline data was collected from 2667 disaster victims at the time of data collection; the exact numbers of inhabitants in the selected region was less than the estimated numbers by the investigator.

End Line

The end line data was collected from 1719 Disaster victims out of 2667 as 948 respondent victims were either unavailable or had withdrawn or migrated to some other areas.

Study Tools/ Instruments

1. **PTSD Checklist – Civilian Version (PCL-S) was used to find the magnitude/ prevalence of PTSD among Disaster victims.**
2. **WHOQOL- BREF was used to measure the Health related QOL.**
3. **Structured, pre-tested instrument to elicit Socio- Demographic and other variables.**

SWOT Analysis

SWOT analysis was done under two main categories

1. **Mitigation**
2. **Preparedness**

Mitigation:

Mitigation involved 8 subheadings with sub statements, which included soil conservation, new crop pattern, human settlements, self-constructed houses, roads, warning systems, organizing counter disaster strategy and vulnerability.

Preparedness

Preparedness included 10 sub-statements related to biological needs of disaster victims at the time of emergency which included communication, food, health, water supplies, sanitation, shelter, child care, logistics management, public education and rescue teams.

Data Collection

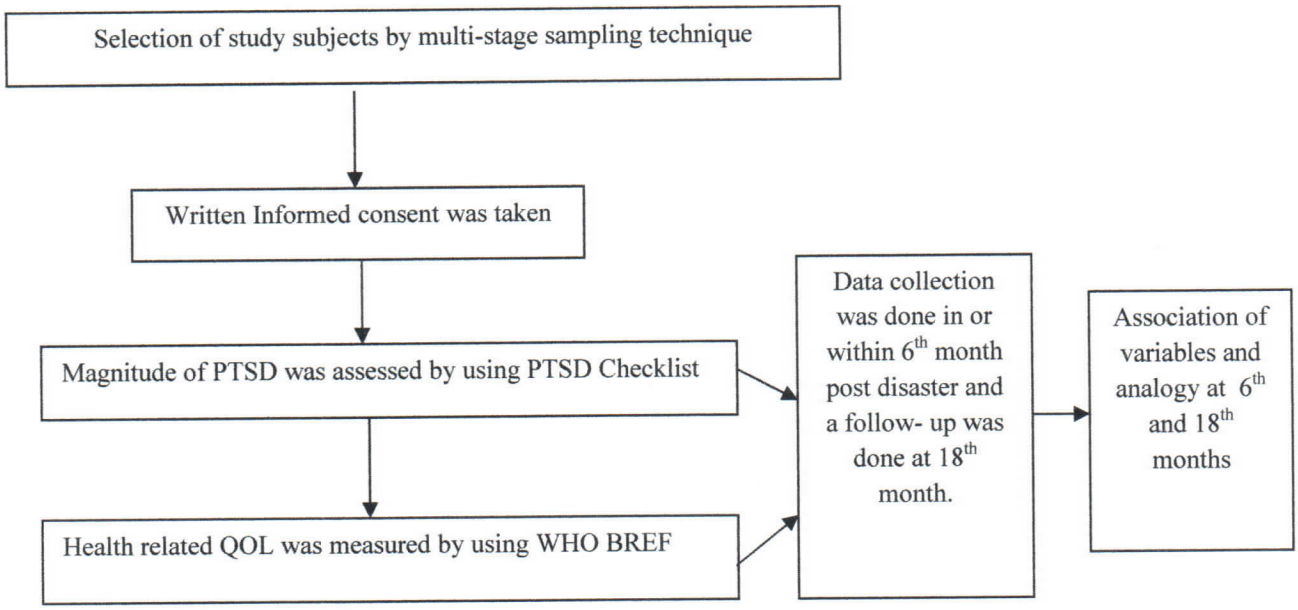
Study subjects were administered the chosen instruments by household survey to elicit the information related to PTSD, Health related QOL and Socio- Demographic and related data. Data collection was started at six (6^{th}) month post - disaster for baseline observation and at eighteenth (18^{th}) month of post- disaster to assess variation, if any of symptoms of PTSD & indices of H-QOL.

Focus Group Discussions (FGDs) and In Depth Interview's (IDI's)

The qualitative component of the study was based on FGDs and IDIs. Participants of 7 FGDs and 9 IDIs from 14 villages (i.e.Trijugi Narayan, Kalimath, Badasu, Jal Talla, Jal Malla, Kotma, Nakot, Banayadi, Chandrapuri, Gangapur, Lamgondi, Devlibranigram and Chaumasi) of Ukhimath block of district Rudraprayag were recruited by convenient sampling. Representatives of PRI, teachers, priests, social workers, NGO representatives, government officials, ANMs, AWWs, ASHAs and significant others constituted the respondents.

The FGDs were moderated by skilled moderator. Interpersonal relationship was maintained by the Rapporteur among the participants. All responses of members were recorded by Recorder and members comprised of 8-16 participants. Duration of discussion was between 60 -90 mins.

Study Protocol


Selection of study subjects by multi-stage sampling technique
Written Informed consent was taken
Magnitude of PTSD was assessed by using PTSD Checklist
Health related QOL was measured by using WHO BREF
Data collection was done in or within 6th month post disaster and a follow- up was done at 18th month.
Association of variables and analogy at 6th and 18th months

Ethical Considerations

The purpose of the study was explained and written informed consent was obtained from the study participants.

Analysis

Collected data was analyzed using SPSS version 19. Results obtained were interpreted by using descriptive methods/statistics. Associations among variables were ascertained by application of either parametric or non-parametric tests, depending on data variables at a significance level of 0.05. Content analysis/ Nominal Impression from FGDs and IDIs were done from transcripts/records.

RESULTS

I. Socio Demo-Graphic and other Variables

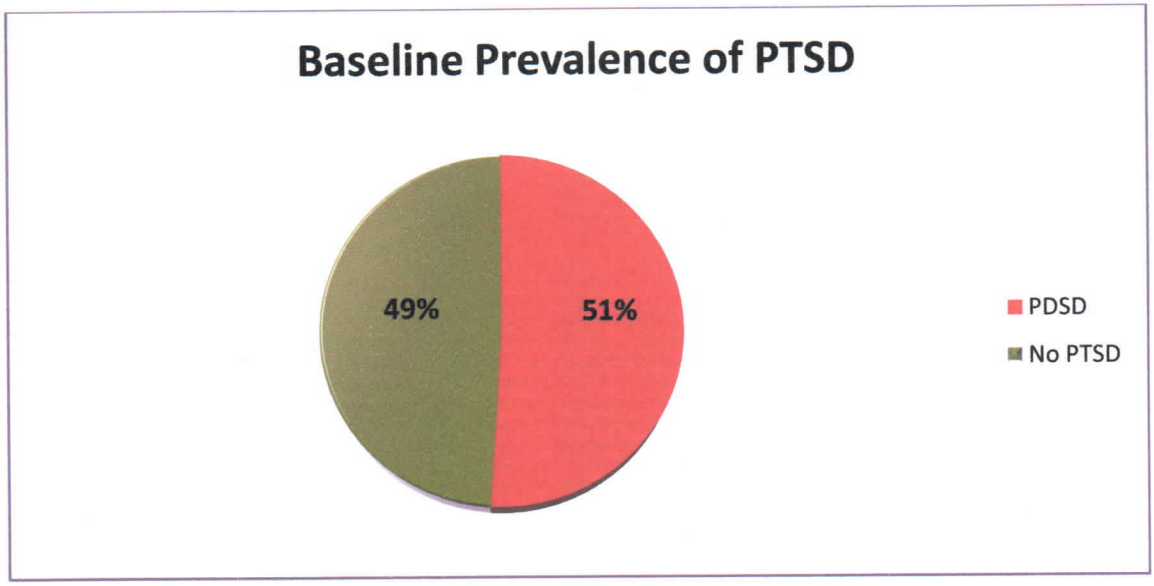
S. No	Variable		Frequency	Percentage(%)
1.	**Age in Years**	14-24	300	11
		25-34	842	**32**
		35-44	702	26
		45-54	521	20
		55-64	244	9
		65-74	58	2
2.	**Gender**	Male	1321	**50.5**
		Female	1346	**49.5**
3.	**Education status**	No formal Education	524	20
		Primary education	1051	**39**
		Secondary education	866	33
		Tertiary education	226	8
4.	**Occupation**	Skilled	407	15
		Non skilled	1432	**54**
		No occupation	828	31
5.	**Family monthly income**	<5000	176	7
		5001-10000	1074	**40**
		10001-20000	1173	**44**
		>20000	244	9

6.	**Marital status**	Single	183	6.9
		Married	2472	**92.7**
		Separated	12	.4
7.	**Kind of disaster exposed**	Water	1302	**49**
		Land	772	30
		Road	593	21
8.	**Frequency of exposure**	1	1041	**39**
		2	761	29
		3	865	32
9.	**Duration of exposure**	1week	1215	**46**
		2week	213	8
		3week	118	6
		4week	1121	42
10.	**Type of exposure**	Potentially life threatening	963	36
		Not potentially life threatening	1704	**64**
11.	**Type of loss**	Any impairment/disability/death	368	14
		Loss of property	807	30
		None	1492	**56**

II. Prevalence of PTSD among Disaster victims.

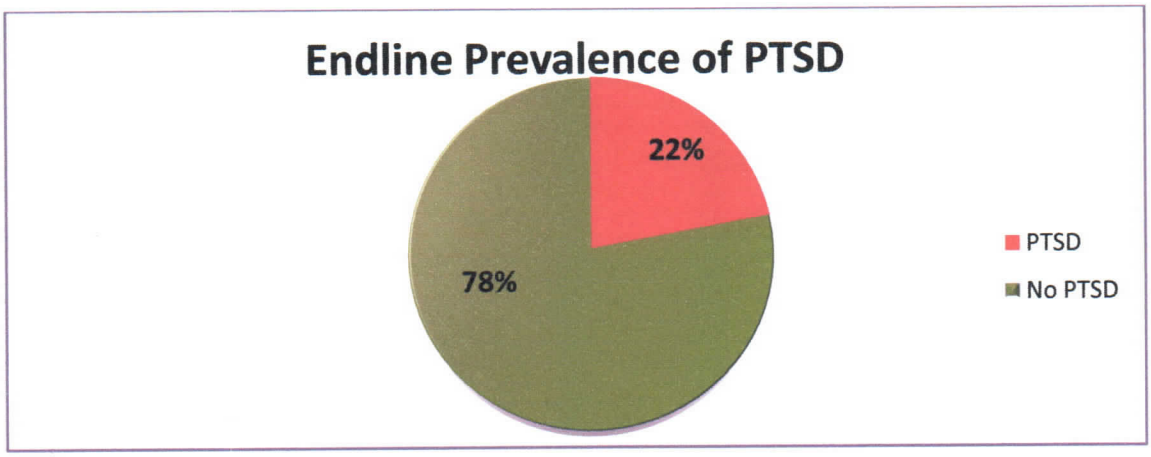
2.1 Prevalence of PTSD among Disaster victims at Baseline

(N=2667)



2.2 Prevalence of PTSD among Disaster victims at End line

(N=1719)



2.3 Comparison of Baseline PTSD with End line PTSD

S. No	PTSD	Mean± S.D	't' value	'p' value
1.	Baseline	51.02±18.8	21.10	.0001
2.	End Line	38.9±18.2		

III. Magnitude of HQOL Disaster victims

3.1 Magnitude of HQOL of Disaster victims at Baseline

S. No	QOL (domain wise)	Mean ± S.D	Interpretation
1	**Total (across all domains)**	1.76±.43	Poor
2	**Physical**	2.0±.03	Poor
3	**Psychological**	1.1±.40	Very Poor
4	**Social**	2.0±.02	Poor
5	**Environmental**	2.0±.01	Poor

3.2 Magnitude of HQOL of Disaster victims at End line

S. No	QOL(domain wise)	Mean ± S.D	Interpretation
1	**Total (across all domains)**	2.53±.43	Neither poor nor Good
2	**Physical**	3.02±.06	Good
3	**Psychological**	1.9±.30	Poor
4	**Social**	3.7±.71	Good
5	**Environmental**	4.1±.05	Very Good

3.3 HQOL comparison between Baseline and End line

S. No	QOL(domain wise)	Base Line	End Line	't' value	'p' value
		Mean ± S.D	Mean ± S.D		
1	**Total (across all domains)**	1.76±.43	2.53±.43	52.49	.0001
2	**Physical**	2.0±.03	3.02±.06	63.45	.0001
3	**Psychological**	1.1±.40	1.9±.30	66.33	.001
4	**Social**	2.0±.02	3.7±.71	99.22	.0001
5	**Environmental**	2.0±.01	4.1±.05	170.7	.0001

IV. Association between PTSD & HQOL

(by correlation & regression)

S. No	Variables	r value	β	Sig
1.	TOTAL QOL & PTSD	-.91**	-1.259	.0001
2.	Physical QOL & PTSD	-.87**	-.334	.0001
3.	Psychological QOL & PTSD	-.85**	-.310	.0001
4.	Social QOL& PTSD	-.822**	-2.213	.0001
5.	Environmental QOL &PTSD	-.876**	-.372	.0001

V. SWOT analysis regarding ongoing Disaster preparedness and mitigation measures.

S. No	S- Strength
1	1. Active stake holding by NGOs. 2. Community resource support (man, material, money). 3. Involvement of community at all phases of management. 4. Committed sponsors/funders /development agencies supporting disaster risk reduction. 5. Support by the State Disaster cell. 6. Inter-sectoral coordination.
2	**W- Weakness**
	1. The link between early warning information available and actions taken is currently weak. 2. Weak institutional capacity. Skewed focus on Disaster emergency response and longer-term management. 3. Inadequate human resources (motivated & trained). 4. Lack of an operational 'Disaster Policy' and supportive framework. 5. Lack of sensitization & awareness of Disaster preparedness. 6. Lack of knowledge on man made ecological imbalances /climate change and consequences. Inadequate weather and climate data collection; lack of infrastructure and manpower to collect, analyze and disseminate Disaster early warning information. 7. Lack of tested & sound preparedness and mitigation plan. 8. Evidence of inefficient application of mitigation strategies.

	9. Limited resource allocation. 10. Delay in allocation, approval and disbursement of funds. Limited recourses allocated to support disaster risk reduction institutional structures.
3	**O-Opportunities**
	1. To develop a relevant Disaster policy and facilitate its implementation. 2. To develop sound& piloted strategies for preparedness and mitigation of disasters. 3. To establish/ improve institutional capacity (Infrastructure, trained personnel, mobilization of resource, emergency response). 4. To empower the community at all phases management (training and sensitization). 5. Promotion of alternative livelihoods to enhance communities coping capacity including innovative farming technology and practices. 6. Creation of a 'multi-sectoral systems approach' for sustainable management. 7. Community endorsed/ sponsored initiatives in furthering outreach services.
4	**T-** Threats
	1. Top down' management approach without community needs assessment (CNA) and situational analysis. 2. Non effective & non replicable preparedness and mitigation plan.

	3. Inefficient mobilization and allocation of resources among stakeholders 4. Abuse of resources and exploitation of real beneficiaries. 5. Complacency toward Geo-climatic changes predisposing to Disasters. 6. Lack of pro-activeness of community in enhancing and sustaining its capacity for disaster preparedness and mitigation measures. 7. Inadequate intersectoral coordination and communication at the various institutional/stakeholder level.

Strength of the Study

- The project was first of its kind with a cross-sectional design and multi-stage probability sampling approach to explore prospectively H-QOL, PTSD and association of related variables among Disaster victims in Uttarakhand.
- The reliable and representative outcome of the sample study has the potential to be extrapolated to analogous study settings and to far larger population for making and implementing effective strategies for Disaster preparedness and mitigation.

Limitation of the Study

- The analysis of the study findings has not factored in confounding factors i.e. genetic and biological predictors/ determinants.
- Study being based on self-reports, responses may have 'recall' bias (victims could have difficulty in remembering the events in actual order of occurrence and trauma associated).

- The instrument of PCL-S was developed and validated vis-à-vis western socio demographic and cultural perspective, which could influence the reliability and validity of elicited response from our study subjects.

Implication of the Study

A number of implications were generated from the study.

- Nursing personnel/care givers need to be trained and develop requisite skill to be able to serve during trying times of Disasters.
- PTSD symptoms must be prioritized for treatment aimed at improving H- QOL among Disaster victims.
- The study helped to understand the role of community (community ownership and stake holding) in Disaster preparedness and mitigation measures.
- Significant association of variables from social domain of QOL and PTSD implies an important role of societal attributes i.e. relationship, sense of belonging, love, dependence and mutual trust etc. in enhancing quality of life people with PTSD.

Conclusion & Recommendations

- The findings of present study highlight requisite need for identification and intervention for PTSD for Disaster Victims in context of developing countries.
- The scope of the study may be extended into a larger sample and coverage area; the initiative has the potential to be replicated at socio-epidemiological state with similar perspective.
- PTSD may persist for several years after a disaster that may result in various functional impairment in affected people both physically and psychologically.
- Required treatment program should be organized to cure post-disaster stress along with assessment, diagnosis and interventions for survivors should be taken as priority goal in a program of public health.
- Both community and provider capacity unit for disaster-preparedness and mitigation system should be built. Imparting appropriate coping skills to deal with post disaster affects via proper designed modules is an imperative need.
- Research studies can also test whether treatment targeting PTSD symptoms have a beneficial effect on H-QOL and whether interventions specifically effectively reduce PTSD symptoms.